

* NOTICES *

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the information display using the display in which a double-sided display is possible and this display which can be used from any [on the rear face of front] side.

[0002]

[Description of the Prior Art] Conventionally, various display units are developed. And it is divided roughly into a reflective mold display panel and a transparency mold display panel as a display panel which used liquid crystal among these display units.

[0003]

[Problem(s) to be Solved by the Invention] However, the reflective mold display panel which consisted of liquid crystal, EL (electroluminescence), etc. was what can be seen only from field side of one of the two. for this reason -- for example, in the case of the portable remote terminal machine of a fold-up formula etc., even when using only a display panel, a part for the covering device in which this display panel was included had to be opened, and it was inconvenient.

[0004] On the other hand, the transparency mold display panel constituted using liquid crystal, EL, etc. can be seen from both sides. However, separation with a background was difficult for this transparency mold display panel, and when only the image on a display was seen, it had the technical problem that this image could not be seen vividly.

[0005] that by which this invention was made in view of the above-mentioned technical problem -- it is - a front flesh side -- it aims at offering the information display using the display in which a double-sided display is possible and this display which can see the image displayed even from which field side.

[0006]

[Means for Solving the Problem] Namely, the 1st panel of the passage display mold with which this invention has the 1st screen, and this 1st screen and the 2nd screen of the opposite sense, The 2nd panel which can change the transparency condition arranged on the screen of the above 1st of this 1st panel, and a nontransparent condition, It is characterized by providing the 3rd panel which can change the transparency condition arranged on the screen of the above 2nd of the 1st panel of the above, and a nontransparent condition, and the control means which changes the combination of transparency of the 2nd and 3rd panels of the above, and nontransparent to the display direction of the above-mentioned display panel according to the screen.

[0007] Moreover, an input means by which this invention inputs information and a display means to display the information inputted by this input means, In the information display which has the control means which controls the display condition of this display means the above-mentioned display means The 1st panel of the passage display mold which has the 1st screen, and this 1st screen and the 2nd screen of the opposite sense, The 2nd panel which can change the transparency condition arranged on the screen of the above 1st of this 1st panel, and a nontransparent condition, It consists of the 3rd panel which can change the transparency condition arranged on the screen of the above 2nd of the 1st panel of

the above, and a nontransparent condition. The above-mentioned control means According to the screen, it is characterized by changing the combination of transparency of the 2nd and 3rd panels of the above, and nontransparent to the display direction of the above-mentioned display panel.

[0008]

[Function] making transparency the change panel by the side of an observation side, and changing a display panel to coincidence by considering the above-mentioned change panel on the back as nontransparent, if it is in this invention -- a front flesh side -- a clear display image can be obtained from any side, without becoming inside-out.

[0009] Moreover, according to this invention, it becomes possible by making a double-sided change panel transparency to display it as a background body in piles, or to see from the both sides of a display panel to coincidence.

[0010]

[Example] Hereafter, the example of this invention is explained with reference to a drawing. Drawing 1 shows the configuration of the display according to the 1st example of this invention in which a double-sided display is possible. In addition, in drawing 1 and drawing 2 which are described below, a table and the bottom are explained for the bottom as a flesh side.

[0011] In drawing 1, the transparence tablet 2 is arranged above the indicating equipment 1, and transparency/nontransparent change panel 3 is further arranged above this transparence tablet 2. Moreover, the same transparency/nontransparent change panel 4 as the above-mentioned transparency/nontransparent change panel 3 is arranged at the lower part of the above-mentioned display 1. And under the upper part of the above-mentioned transparency/nontransparent change panel 3, and the transparency/nontransparent change panel 4, the transparence sheets 5 and 6 for display protection are arranged, respectively.

[0012] Transparency mold displays, such as LCD and EL, are used for the above-mentioned indicating equipment 1. Moreover, as transparency/nontransparent change panels 3 and 4, like a ferroelectric liquid crystal, an application property is good and the high thing of contrast is used.

[0013] Furthermore, in drawing 1, although the transparence tablet 2 is arranged between the display 1 and transparency/nontransparent change panel 3, it is not restricted to especially this. Namely, what is necessary is to just be arranged so that it may mention later, and it may operate effectively also to the directions from one of front flesh sides. For example, it is also possible to arrange on the outside of the transparence sheets 5 and 6 depending on the method of a tablet.

[0014] The above-mentioned transparency/nontransparent change panels 3 and 4 are connected to the control section 7, and the change of transparency/nontransparent is made by this control section 7. Moreover, the change of transparency/nontransparent change panels 3 and 4 is directed to this control section 7, and the change section 8 which consists of switches etc. is connected to it.

[0015] Next, with reference to drawing 1 and drawing 2, actuation of the display constituted in this way is explained. Drawing 2 (a) is an outline sectional view at the time of use of the front face of this display. The use by the side of the front face of a display is chosen by actuation of the change section 8 of drawing 1 etc. Then, it changes transparency/nontransparent change panel 3 by the side of a display 1 top, i.e., a front face, into a transparency condition with the control signal from a control section 7. It changes transparency/nontransparent change panel 4 by the side of the display 1 bottom, i.e., a rear face, into a nontransparent condition with the above-mentioned control signal at coincidence.

[0016] Drawing 2 (b) is an outline sectional view at the time of use of the rear face of this display. Selection of the use by the side of the rear face of a display of actuation of the change section 8 etc. changes transparency/nontransparent change panel 3 by the side of a display 1 top, i.e., a front face, into a nontransparent condition with the control signal from a control section 7. It changes transparency/nontransparent change panel 4 by the side of the display 1 bottom, i.e., a rear face, into a transparency condition with the above-mentioned control signal at coincidence.

[0017] In addition, although the upper and lower sides of the alphabetic character displayed on a display 1 differ from the direction of on either side in use with the front face of a display, and a rear face, it is possible to adjust the direction of an alphabetic character easily by well-known actuation, such as to

change the scanning direction of a display 1 about this, or to rotate a font. Therefore, detailed explanation here is omitted.

[0018] Furthermore, drawing 2 (c) is an outline sectional view at the time of transparency use of this display. Transparency use of a display is chosen by actuation of the change section 8 etc. Then, transparency/nontransparent change panels 3 and 4 arranged on both sides of a display 1 in this case receive a control signal from a control section 7 so that each may be in a transparency condition.

[0019] Thus, the condition of the other side of a display is observable by changing transparency/nontransparent change panels 3 and 4. Therefore, it becomes possible to display information on a display in piles in the state of a superimposition together with a background.

[0020] Drawing 3 is what showed the 2nd example of this invention, and shows the appearance of the personal digital assistant machine which can change the pen use to which the display mentioned above was applied, and keyboard use. Drawing having shown [this] the usable condition of a keyboard (a) and this drawing (b) are drawings having shown the receipt condition of a keyboard.

[0021] The keyboard 10 is formed in the personal digital assistant machine 9. The hinge 11 for closing motion is attached in the edge of this keyboard 10. And in this hinge 11 for closing motion, it is the display 121 on a side front. And display 122 on a background The display section 13 which it had is attached. Moreover, the switch (not shown) equivalent to the change section 8 of drawing 1 is built in the above-mentioned hinge 11 for closing motion.

[0022] In addition, 14 is a pen for directions used in the display section 13. Now, as shown in drawing 3 (a), the hinge 11 for closing motion is opened and suppose that a keyboard is in an usable condition. At this time, the switch built in the hinge 11 for closing motion is in an off condition. This is followed and it is the display 121 by the side of a front face at the display section 13. The display is performed. Moreover, the pen 14 for directions is used and it is a display 121. The location of the upper arbitration can also be directed. Thereby, coincidence use of a keyboard 10 and the pen 14 for directions is possible.

[0023] Drawing 3 (b) is what showed the condition of having contained the keyboard 10, and it is used by the hinge 11 for closing motion, closing it. At this time, the switch built in the hinge 11 for closing motion is turned on, follows this, and is the display 122 by the side of a rear face at the display section 13. The display is performed. Of course, display 121 by the side of the front face mentioned above As well as the case of a display, the pen 14 for directions is used and it is a display 122. The location of the upper arbitration can be directed.

[0024] In addition, in the example of the personal digital assistant machine shown in drawing 3 , although the front flesh-side change of the display section 13 is performed according to ON/OFF of the switch built in the hinge 11 for closing motion, it is not restricted to this. For example, you may be what is depended on other detection equipments, and the change by the manual.

[0025]

[Effect of the Invention] according to invention according to claim 1 as mentioned above -- a front flesh side -- the display which can see a clear display from any side and in which a double-sided display is possible can be offered. And according to invention according to claim 2, a change-over of the front flesh side of a display can be made easy.

[0026] Moreover, according to invention according to claim 3, the screen which a display uses can be specified. furthermore -- according to invention according to claim 4 -- a front flesh side -- a display can be easily seen from any side.

[0027] Moreover, according to invention according to claim 5, even if it is the display of a transparency mold, it can see. according to invention according to claim 6 -- a front flesh side -- the information display using the display which can see a clear display from any side and in which a double-sided display is possible can be offered.

[0028] And according to invention according to claim 7, a change-over of the front flesh side of a display can be made easy. Moreover, according to invention according to claim 8, the screen which a display uses can be specified.

[0029] furthermore -- according to invention according to claim 9 -- a front flesh side -- a display can be

easily seen from any side. Moreover, according to invention according to claim 10, even if it is the display of a transparency mold, it can see.

[Translation done.]

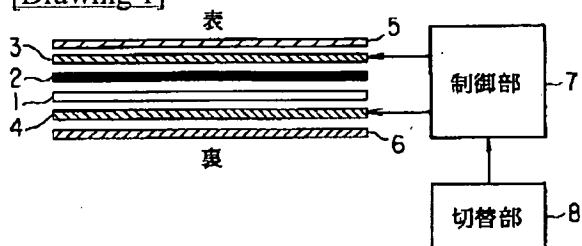
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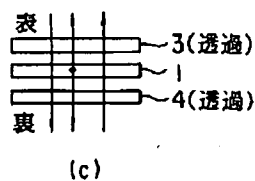
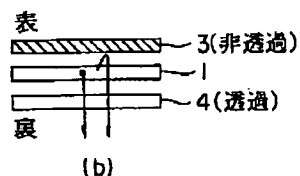
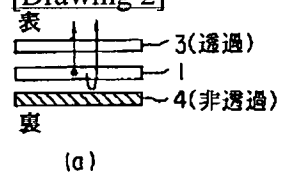
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DRAWINGS

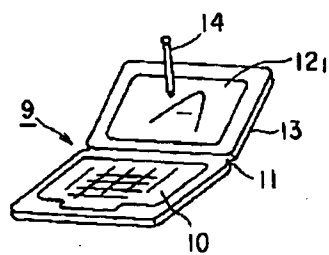
[Drawing 1]



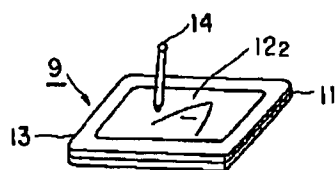
[Drawing 2]



[Drawing 3]



(a)



(b)

[Translation done.]